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METHOD OF JOINING DRYWALL PANELS

Arthur A. Wegwerth, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn., a corporation of Delaware

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6 Claims. (Cl. 52—741)

ABSTRACT OF THE DISCLOSURE

A drywall jointing and filler composition which adheres well to gypsum drywall panels and metal which dries without visible shrinkage and which is easily sanded after drying, formed from inorganic friable hollow microbubbles and a quantity of a thermoplastic, nonhydrosettable, nonrubbery matrix adhesive, having a quantity approximately sufficient to fill the interstices among the microbubbles, the mixture containing a volatile vehicle mixture which permits careful control of the drying time.

This application is a continuation-in-part of our copending application S.N. 204,833, filed June 25, 1962, now abandoned.

This invention relates to the art of uniting or joining wallboard sections in drywall construction to provide smooth essentially-flat surfaces, and more particularly to new compositions for filling joints between drywall panels.

Due to the tendency of hydrosettable filler material to shrink and crack greatly on drying after application, the techniques used heretofore to unite drywall panels have generally required multiple application of filler material to a joint area, to arrive at a finished joint adequately filled and reasonably free of objectional cracking. Unfortunately, multiple application generally causes buildup of excess material which ultimately must be sanded away in order to smooth the joint to a plane essentially even with adjacent panel surfaces. Also, multiple application tends to cause the area covered with filler material to become wider and wider, as each succeeding coat is applied, resulting in increased labor and material costs.

The considerable time heretofore consumed in forming appropriately concealed joints between drywall panels has been due not only to the several applications of filler required, but also to the lengthy drying time required for hydrosettable filler compositions. Frequently only one application in one day has been possible.

In the case of covering or obliterating nail dimples, problems analogous to those aforenoted for the joint have confornted contractors installing drywall panels.

The art has long sought a reduction in the time required to unite or join drywall panels to provide a smooth essentially flat surface. This invention provides a solution to this problem as well as several others, as hereinafter noted.

By practicing this invention, joints between drywall panels may be filled with an amount of material more closely approximating that which ultimately remains in the area of the joint after the sanding step. A single application of my jointing compound is frequently sufficient to form a satisfactory filled and united joint ready for sanding. Even where my jointing compound is initially applied in "starved" condition, insufficient to level a joint with adjacent surfaces, only a single further application of compound is necessary to smooth over the joint area to prepare it for sanding.

A surprising feature of my jointing compound is its property of drying with essentially no shrinkage or at least no objectionable shrinkage detectable to the naked eye.

Insofar as is known, no one heretofore has been able to form such a composition for practical use in uniting drywall panels. In combination with lack of shrinkage, my jointing compound is easily sanded so as to reduce the time required for finishing before painting. It is easily applied by trowel or other suitable means without curling, crawling or crumbling during application. The compound, as it is applied, exhibits a buttery consistency permitting ease of application with conventional equipment (e.g., a squeeze box) to gain a smooth non-shrinking coating with nicely feathered edges. These results are not obtainable by conventional attempts to gain low shrinkage, such as the technique of using a low volatile content, which impairs the spreadability of the composition.

Advantageously the jointing compound of this invention may be controlled in its rate of drying within desired limits, preferably within a few hours time up to approximately 8 hours, or possibly more. In effect, the formulation of my compound may be so adjusted as to cause it to dry (or at least set up in its exposed surface portions) sufficiently within a brief period of time (e.g. a few hours) to permit early sanding and application of paint over the seam. The time consumed in forming a joint between drywall panels by practicing this invention as compared to prior art techniques may be reduced by as much as two-thirds or more.

Preferred jointing compounds of the invention contain organic solvents permitting them to be used even under freezing conditions without the loss of bond as experienced with conventional joint treatment compounds. These preferred formulations also remain stable under freezing conditions during transit and storage from a manufacturer to an ultimate user without impairment of properties required for drywall seam application.

The jointing compound of this invention contains spherical bodies which are a critical component of it. In fact, the bulk volume of spherical bodies in my jointing compound is essentially as great as the total "water-displacement" volume occupied by the total of the solids ingredients in it. They accordingly stabilize the volume of the jointing compound as it dries. These spherical bodies have been found to account for at least about 70%, preferably at least 80%, of the "water-displacement" volume of the solids ingredients in the jointing compound. They are inorganic, non-packing, low-density, essentially hollow, free-flowing, friable, spherical bodies having a diameter between about 5 and 300 microns hereinafter referred to as "microbubbles" or "spheroids." Preferably at least 80% (up to and including 100%) of them by volume have a diameter within the range of 10 to 150 microns. These inorganic microbubbles must be chemically inert to the organic binder matrix composition in which they are essentially uniformly dispersed to form the jointing compound. Their free-flowing and non-packing properties facilitate spreadability of the jointing compound. From the practical standpoint of sandability of the final composition in a filled joint, it is critical that the inorganic microbubbles possess a degree of fragility or brittleness. Fragility of inorganic microbubbles of useful characteristics generally decreases as their bulk average liquid displacement specific gravity or density increases (e.g., solid spheres are dense and are nearly impossible to sand). By "bulk average liquid displacement specific gravity" is meant the average liquid displacement specific gravity of the bulk or mass of microbubbles. In terms of bulk average liquid displacement specific gravity, the microbubbles should exhibit a value less than about 1.7. At very low values, i.e. below about 0.15, problems of extreme fragility are encountered when applying the jointing compound. Microbubbles of extremely low specific gravity tend to be crushed during troweling application, greatly increasing the shrinkage of the compound. Due to